Chapter 6

Installation of Ubuntu Linux

Introduction

Ubuntu (pronounced as oo-BOON-too) is an open source operating system sponsored by Canonical Ltd. Primarily, this operating system was developed for personal computers (PCs) but later on, used in servers also. The word 'Ubuntu' is from the African Zulu language whose meaning is "humanity to others." The Ubuntu desktop is very easy to use and easy to install. It includes everything you need to use in your school, home or office. It's also open source, secure, accessible, and free to download from its official website www.ubuntu.com. In this session, we will understand the installation requirement and installation procedure of Ubuntu desktop operating system using a bootable DVD drive or a USB flash drive.

Features of Ubuntu Linux

- Ubuntu is user-friendly.
- Ubuntu is FOSS (free and open source software) operating system.
- Ubuntu can be downloaded from its official website www.ubuntu.com.
- It is more secure as compared to the Windows operating system.
- High customisation, it means you can set your own flavors of working.
- Many Ubuntu flavors are readily available.
- Online Ubuntu community is available to help you out in any problem.
- Minimum hardware is required to install Ubuntu.
- Lots of free software in software centers.

Installation Requirements

Ensure the following technical requirements are in place before starting the installation:

- connect your computer system to an uninterrupted power source,

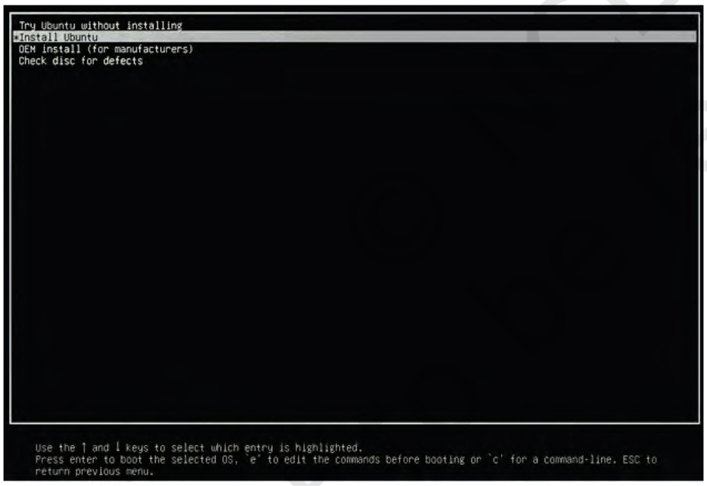
- ensure that your computer has at least 25GB of free disk storage space,
- make a bootable DVD or a USB flash drive of latest version of Ubuntu. Here we are taking the Ubuntu version 18.04,
- make sure to take data backup before starting the fresh installation.

Boot from Ubuntu Bootable Disk DVD or USB Flash Drive

To install Ubuntu, first prepare the bootable disk, either DVD or USB flash drive. Nowaday's most computers are able to boot from USB. To install the Ubuntu Linux OS, follow the steps below:

- put the Ubuntu bootable disk in case of DVD into optical/DVD drives and in case of USB flash drive, into the USB socket. Make sure the boot device order has set to the disk being used as either CD/DVD or USB flash drive.
- restart the computer. After restarting, the computer will boot from the bootable DVD and the install window as shown in Figure 6.1 will appear on your computer screen.

  There are two options shown, 'Try Ubuntu' and 'Install Ubuntu'. The first option 'Try Ubuntu' allows you to just use the Ubuntu on a trial basis without permanent installation; the other option 'Install Ubuntu' allows actual installation. It will launch the installer automatically, as shown in Figure 6.1. After selecting the 'Install Ubuntu' option, select the language from the left side pan. By default, the language selected is 'English'. Ubuntu can also be installed in other listed languages.



```
Try Ubuntu without installing
*Install Ubuntu
OEM install (for manufacturers)
Check disc for defects

Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, `e' to edit the commands before booting or `c' for a command-line. ESC to
return previous menu.
```

Fig. 6.1: Installation window of Ubuntu

Prepare to Install Ubuntu

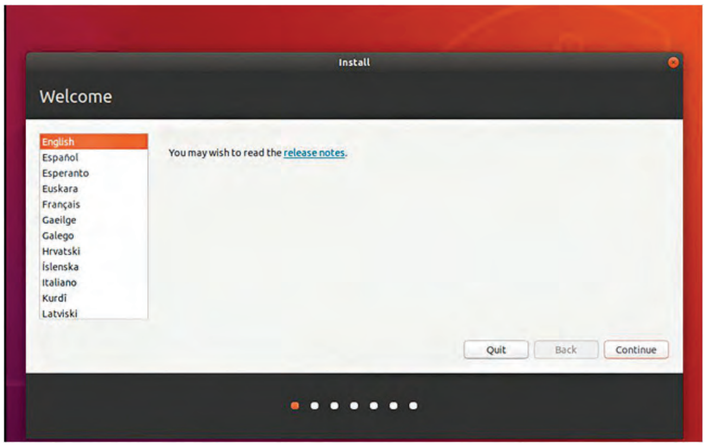
Now the installer will recognise your computer configuration and install the device drivers automatically.

If it doesn't correctly guess the default layout of any device, use the 'Detect keyboard layout' button to run through a brief configuration procedure. The English (US) keyboard is selected by default in the keyboard layout option as shown in Figure 6.3.

Press 'Continue' to apply. The next window will appear as shown in Figure 6.4, that will ask you the type of installation—'Normal installation' or 'Minimal installation'.

The normal installation is the default bundle of utilities, applications, games, and media players — a great launchpad for any Linux installation. The minimal installation takes considerably less storage space and allows to install the required stuff. Select the normal or minimal as per your requirement. Generally normal option is selected by the beginners. Below are the other options, the two checkboxes 'Download updates while installing Ubuntu' and 'Install third party...'.

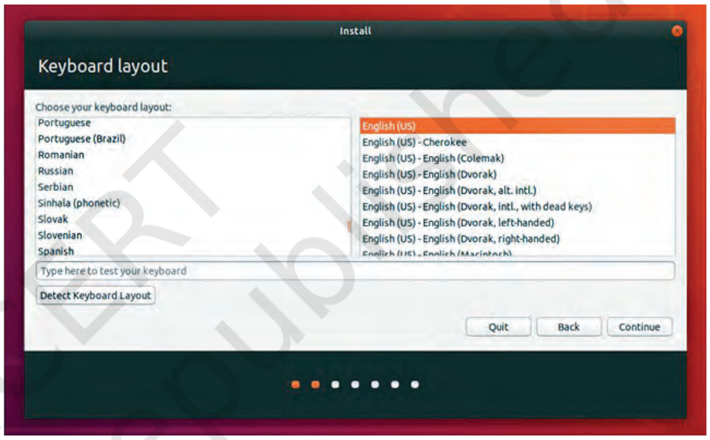
It is recommended to tick both the options. Stay connected to the Internet to get the latest updates while the installation takes place.


Install

Welcome

You may wish to read the release notes.

Fig. 6.2: Default language selected as 'English'


Install

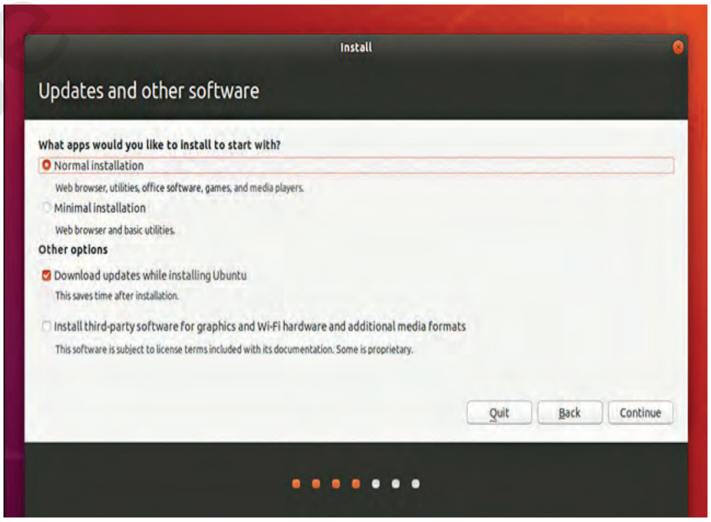
Keyboard layout

Choose your keyboard layout:

English (US)

Portuguese
Portuguese (Brazil)
Romanian
Russian
Serbian
Sinhala (phonetic)
Slovak
Slovenian
Spanish
English (US)
English (US) - Cherokee
English (US) - English (Colemak)
English (US) - English (Dvorak)
English (US) - English (Dvorak, alt. intl.)
English (US) - English (Dvorak, intl., with dead keys)
English (US) - English (Dvorak, left-handed)
English (US) - English (Dvorak, right-handed)
Type here to test your keyboard
Detect Keyboard Layout
Quit
Back
Continue

Fig. 6.3: Selecting 'Detect keyboard layout'


Install

Updates and other software

What apps would you like to install to start with?

● Normal installation

Web browser, utilities, office software, games, and media players.

○ Minimal installation

Web browser and basic utilities.

Other options

☑ Download updates while installing Ubuntu

This saves time after installation.

☐ Install third-party software for graphics and Wi-Fi hardware and additional media formats

This software is subject to license terms included with its documentation. Some is proprietary.

Fig. 6.4: Selecting 'Normal installation'

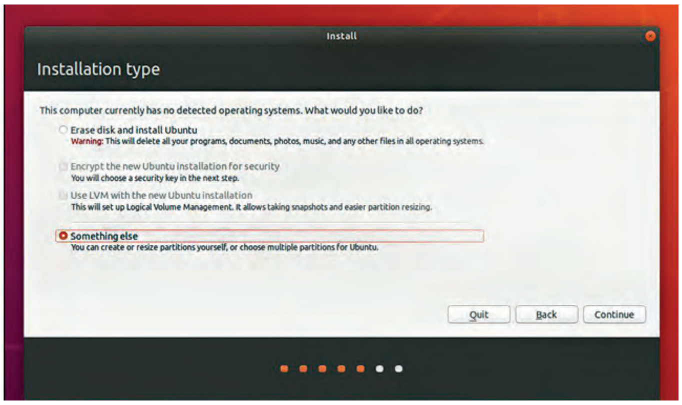
Select Installation Type and Allocate Drive Space

The next installation window as shown in Figure 6.5 will ask you to provide the installation type. If the computer has already installed any other operating system then you can install the Ubuntu alongside the other operating systems, so that you have the option to boot the computer with any of the operating system. The 'Erase disk and install Ubuntu' option will format the hard disk and start the installation of Ubuntu. In this case all the previous data will be lost. If you are an advanced user choose the 'Something else' option.

Select the appropriate option and click on continue. The next window as shown in Figure 6.6 will allow you to review the partition and allocate the disk space. Change the partition as per your requirement and click on 'Install Now' button.

In any Linux system, there should be three partitions namely, swap, boot, and root (/). If you keep the pre-existing partitions as it is, click on 'Install Now' button to proceed the installation with pre-existing partitions. The alert will be displayed. Then click on 'Continue' button to continue the installation.

If you have to create the partitions manually as per your requirement, then click on the 'Change' button to change the partitions. The 'Edit partition' window will be displayed where you can create the partition. First, we will create the swap partition. Swap is a small space on the drive that is used like system memory (RAM). It is recommended to keep the swap area slightly more than



This computer currently has no detected operating systems. What would you like to do?

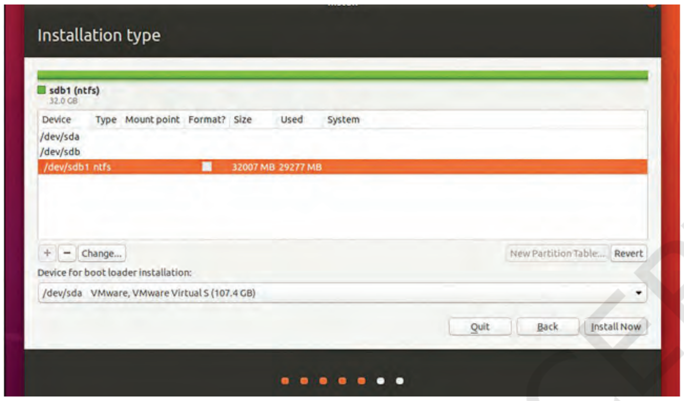
○ Erase disk and install Ubuntu
Warning: This will delete all your programs, documents, photos, music, and any other files in all operating systems.

☐ Encrypt the new Ubuntu installation for security
You will choose a security key in the next step.

☐ Use LVM with the new Ubuntu installation
This will set up Logical Volume Management. It allows taking snapshots and easier partition resizing.

● Something else
You can create or resize partitions yourself, or choose multiple partitions for Ubuntu.

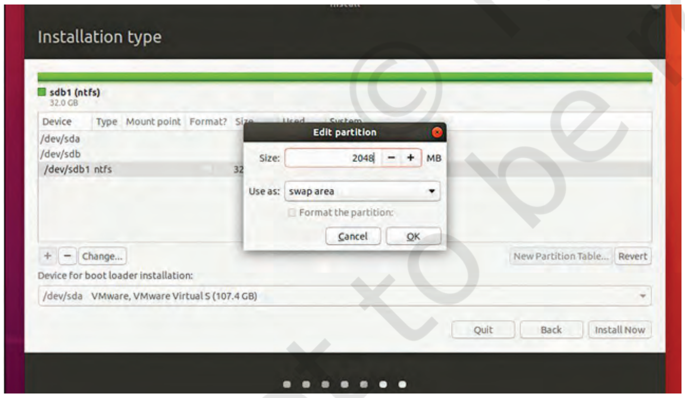
Fig. 6.5: Selecting 'Something else'



Device	Type	Mount point	Format?	Size	Used	System
/dev/sda						
/dev/sdb						
/dev/sdb1	ntfs		☐	32007 MB	29277 MB	

Device for boot loader installation:
/dev/sda VMware, VMware Virtual S (107.4 GB)

Fig. 6.6: Creating swap partition



Size: 2048 MB

Use as: swap area

☐ Format the partition:

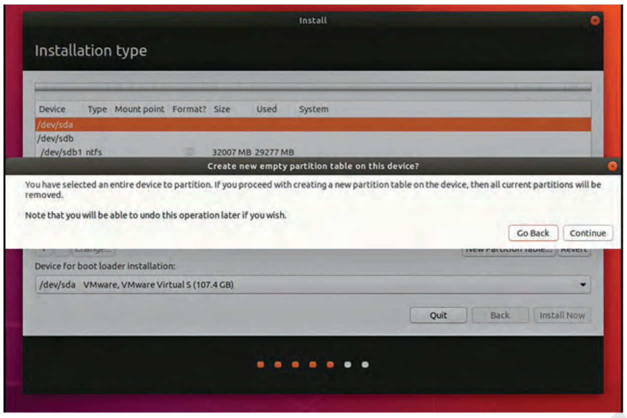
Device for boot loader installation:
/dev/sda VMware, VMware Virtual S (107.4 GB)

Fig. 6.7: Creating new partition table

Note: Options related to side-by-side installation or erasing a previous installation are only offered when pre-existing installations are detected.

the amount of RAM in your PC. For example, having 1 GB of RAM creates swap area of 2GB (2048 MB) as shown in Figure 6.7. When you click 'OK' an alert will be displayed. Then click on 'Continue' button as shown in Figure 6.7 to create the partition name 'swap area'.

A new partition is created with swap area of 2048 MB as shown in Figure 6.8. Next to create '/' boot partition, use Ext4 journaling file system as shown in Figure 6.9.

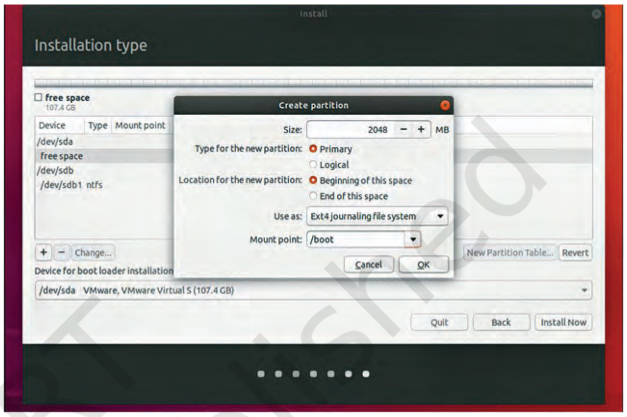


Create new empty partition table on this device?

You have selected an entire device to partition. If you proceed with creating a new partition table on the device, then all current partitions will be removed.

Note that you will be able to undo this operation later if you wish.

Fig. 6.8: Create a new partition



Create partition

Size: 2048 MB

Type for the new partition: ● Primary ○ Logical

Location for the new partition: ● Beginning of this space ○ End of this space

Use as: Ext4 journaling file system

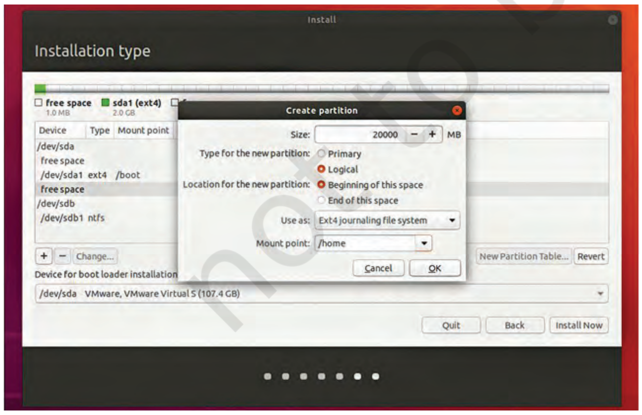
Mount point: /boot

Fig. 6.9: Creating '/' boot partition

To create boot partition, select 'boot' from dropdown of 'mount point'. Also, note that the file system which Linux uses is selected by default as Ext4. Click 'OK' to create '/boot' partition.

Then create '/home' partition, use Ext4 journaling file system as shown in Figure 6.10.

Then you will need to create '/' partition, Using Ext4 journaling file system as shown in Figure 6.11.



Create partition

Size: 20000 MB

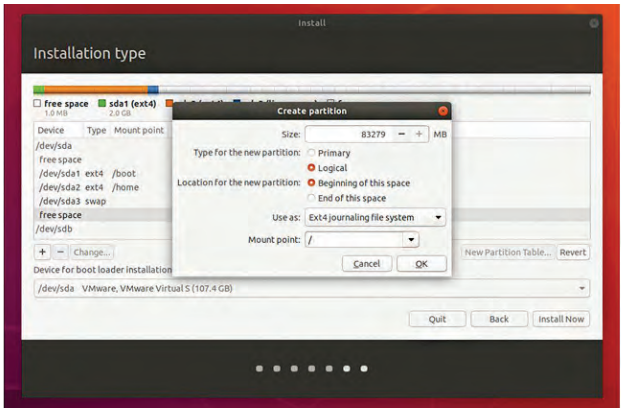
Type for the new partition: ○ Primary ● Logical

Location for the new partition: ● Beginning of this space ○ End of this space

Use as: Ext4 journaling file system

Mount point: /home

Fig. 6.10: Creating '/' home partition



Create partition

Size: 83279 MB

Type for the new partition: ○ Primary ● Logical

Location for the new partition: ● Beginning of this space ○ End of this space

Use as: Ext4 journaling file system

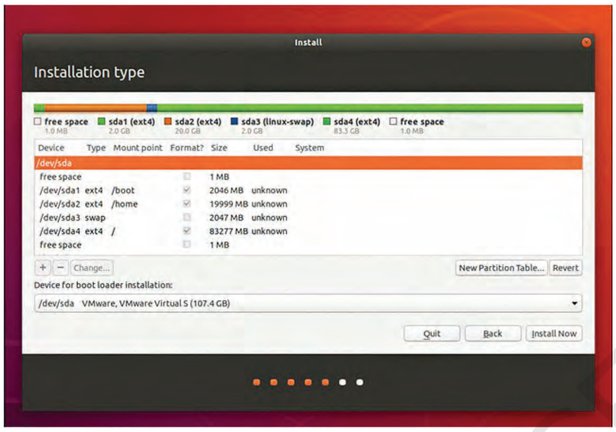
Mount point: /

Fig. 6.11: Creating root (/) partition

Begin Installation

After creating the partitions as above, the new partition table along with the storage space allocated to each area will be seen as shown in Figure 6.12. To begin installation, click on the 'Install Now' button.

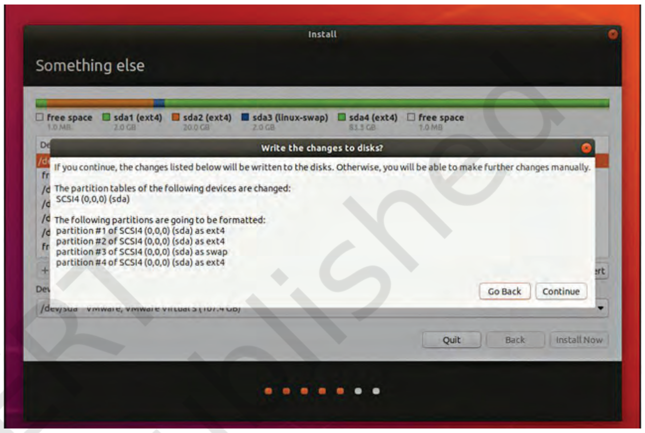
Clicking on 'Install Now' button, a small pane will appear with an overview of the storage options you have chosen as shown in Figure 6.13. You have the chance to go back by clicking on the 'Go Back' button if the details are incorrect.



Device	Type	Mount point	Format?	Size	Used	System
/dev/sda						
free space			☐	1 MB		
/dev/sda1	ext4	/boot	☑	2046 MB	unknown	
/dev/sda2	ext4	/home	☑	19999 MB	unknown	
/dev/sda3	swap		☐	2047 MB	unknown	
/dev/sda4	ext4	/	☑	83277 MB	unknown	
free space			☐	1 MB		

Device for boot loader installation:
/dev/sda VMware, VMware Virtual S (107.4 GB)

Fig. 6.12: Begin installation

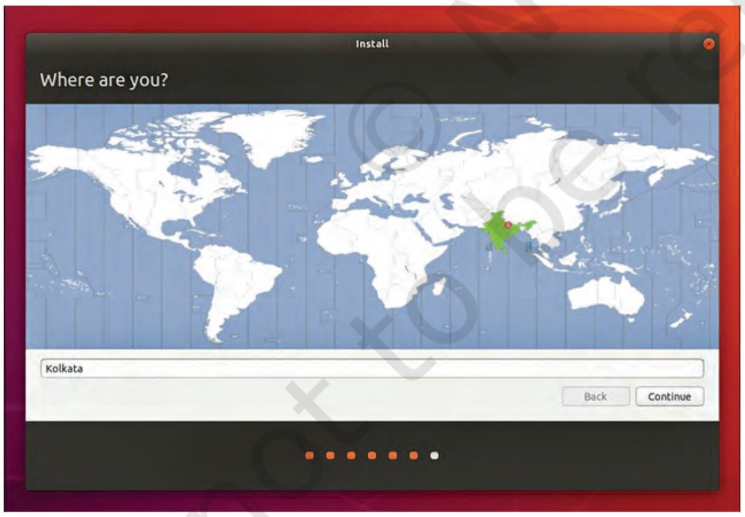


If you continue, the changes listed below will be written to the disks. Otherwise, you will be able to make further changes manually.

The partition tables of the following devices are changed:
SCSI4 (0,0,0) (sda)

The following partitions are going to be formatted:
partition #1 of SCSI4 (0,0,0) (sda) as ext4
partition #2 of SCSI4 (0,0,0) (sda) as ext4
partition #3 of SCSI4 (0,0,0) (sda) as swap
partition #4 of SCSI4 (0,0,0) (sda) as ext4

Fig. 6.13: Write changes to disk



Kolkata

Fig. 6.14: Select your geographical location

Click 'Continue' to fix those changes in place and start the installation process.

Select your location

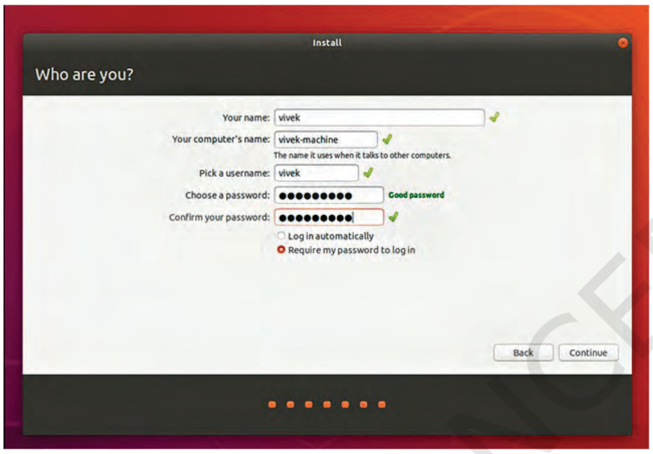
If you are connected to the internet, your location will be detected automatically. Check if your location is correct and click 'Forward' to proceed. If you are not sure of your time zone, type the name of a local town, city, or use the map to select your location.

Change login details

Enter your name and the installer will automatically suggest a computer name and username. These can be changed if you prefer. The computer name is how your computer will appear on the network, while your username will be your login and account name.

Next, enter a strong password (Figure 6.15). The installer will let you know if it's too weak. You can also choose to enable automatic login and home folder encryption. If your machine is portable, it is recommended to keep automatic login disabled and enable encryption. This should stop people from accessing your personal files if the machine is lost or stolen.

If you enable home folder encryption and you forgot your password, you won't be able to retrieve any personal data stored in your home folder.



Who are you?

Your name: vivek ✓

Your computer's name: vivek-machine ✓

The name it uses when it talks to other computers.

Pick a username: vivek ✓

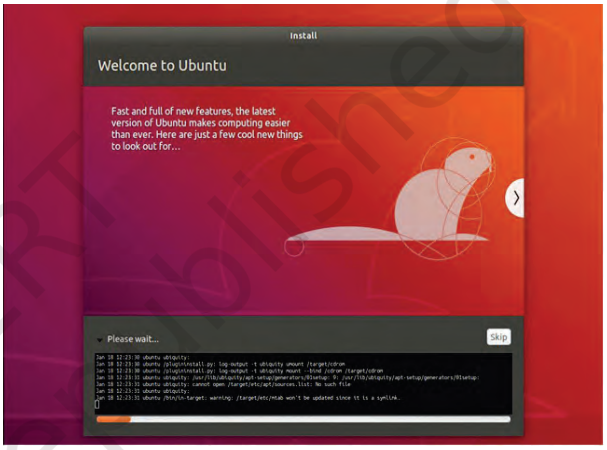
Choose a password: ●●●●●●●●●● Good password

Confirm your password: ●●●●●●●●●● ✓

○ Log in automatically

● Require my password to log in

Fig. 6.15: Supplying user credentials



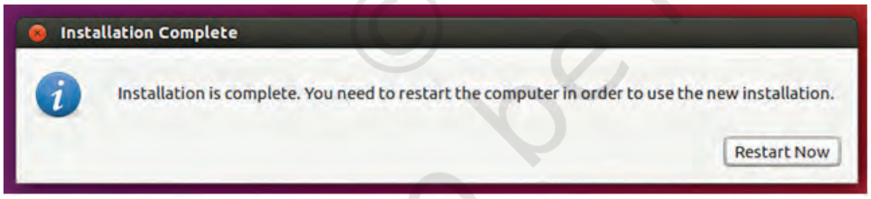
Welcome to Ubuntu

Fast and full of new features, the latest version of Ubuntu makes computing easier than ever. Here are just a few cool new things to look out for...

Please wait...

```
Jan 18 12:23:30 ubuntu ubiquity:
Jan 18 12:23:30 ubuntu /plugininstall.py: log-output -t ubiquity umount /target/cdrom
Jan 18 12:23:30 ubuntu /plugininstall.py: log-output -t ubiquity mount --bind /cdrom /target/cdrom
Jan 18 12:23:31 ubuntu ubiquity: /usr/lib/ubiquity/apt-setup/generators/01setup: 9: /usr/lib/ubiquity/apt-setup/generators/01setup:
Jan 18 12:23:31 ubuntu ubiquity: cannot open /target/etc/apt/sources.list: No such file
Jan 18 12:23:31 ubuntu ubiquity:
Jan 18 12:23:31 ubuntu /bin/in-target: warning: /target/etc/mtab won't be updated since it is a symlink.
```

Fig. 6.16: Expanding background installation window



Installation Complete

Installation is complete. You need to restart the computer in order to use the new installation.

Fig. 6.17: Restart after installation complete

Background installation

The installation will now complete in the background while the installation window teaches you a little about how wonderful Ubuntu is. Depending on the speed of your machine and network connection, installation will take a few minutes.

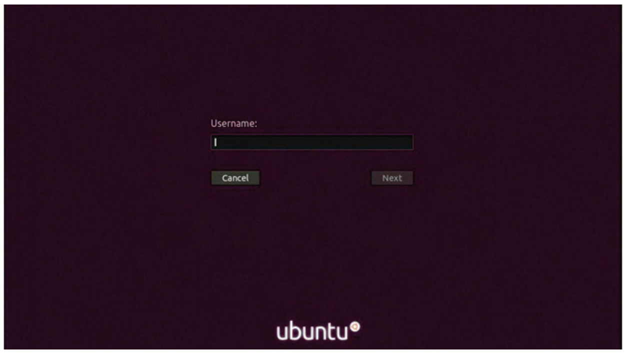


Fig. 6.18: Login to Ubuntu

Fig. 6.19: Ubuntu home screen

Installation complete

After everything has been installed and configured, a small window will appear, asking you to restart your machine. Click on 'Restart Now' and remove either the DVD or USB flash drive when prompted. If you initiated the installation while testing the desktop, you also get the option to continue testing.

Thus, you have successfully installed Ubuntu Linux in your computer. Enter user credentials and use the Linux.

CHECK YOUR PROGRESS

A. Multiple choice questions

1. System structure of Linux is _____________.
   (a) Microsoft Windows
   (b) UNIX
   (c) Window Vista
   (d) Monolithic Kernel
2. Linux is an/a_____________.
   (a) closed Source
   (b) freeware
   (c) open source software
   (d) Both (a) and (b)
3. Core of Linux operating system is _____________.
   (a) kernel
   (b) shell
   (c) terminal
   (d) command
4. Which one provides command interpreter environment?
   (a) kernel
   (b) shell
   (c) CPU
   (d) hardware
5. Which directory contains configuration files in Linux?
   (a) /etc/
   (b) /bin/
   (c) /dev/
   (d) /root/

6. In Linux, a user can load or upload ______________.
   (a) I/O modules
   (b) I/O devices
   (c) Kernel modules
   (d) File base I/O
7. File name that handles interrupts in Linux is ___________.
   (a) access file
   (b) control file
   (c) interrupts file
   (d) proc interrupts file
8. In Kernel, signals are used to notify a certain ___________.
   (a) decision
   (b) fault
   (c) strategy
   (d) procedure

B. Fill in the blanks

1. Ubuntu is a/an __________ source operating system.
2. On the time of installation of Ubuntu, if you are connected to the internet, your location will be detected __________.
3. Linux is __________ sensitive.
4. Linux considers __________ as its standard input device.
5. The administrative privileges are available to only a user know as __________.

C. Short answer questions

1. What is Linux Kernel?
2. What is the advantage of open source?
3. What are the basic components of Linux?
4. What is GUI?
5. What is the root directory?